

What is claimed is:

1. A method for bonding of ribbon to a first substrate, comprising:
disposing a ribbon between a bond head and first substrate, the bond
head adapted to permit passage of a laser beam therethrough;
5 aiming a laser at the top surface of the ribbon adjacent the bond head;
firing the laser for a predetermined time sufficient to form a first weld
nugget at a first bond site, the first weld nugget consisting of material from both the
ribbon and first substrate.
2. The method of claim 1, wherein the laser is focused adjacent the bond
10 site.
3. The method of claim 2, wherein the ribbon is conductive.
4. The method of claim 2, wherein the ribbon comprises nickel-clad
copper.
5. The method of claim 1, wherein the laser is a Nd:YAG laser.
- 15 6. The method of claim 2, further comprising the steps of:
moving the bond head relative to a work piece to position the bond head at a
second bond substrate while playing out ribbon from a ribbon spool;
disposing the ribbon between the bond head and second substrate;
aiming the laser at the top surface of the ribbon;
20 firing the laser for a predetermined time sufficient to form a second
weld nugget at a second bond site, the second weld nugget consisting of material from
both the ribbon and second substrate.
7. The method of claim 6, further comprising the additional step of
severing the ribbon adjacent the second bond site.
- 25 8. The method of claim 7, wherein the ribbon is severed by the bond head
to form a wedge bond.
9. An apparatus for bonding a section of ribbon to at least one substrate
pad, comprising:
a laser beam generator;

a bond foot defining an aperture for passage of the laser beam therethrough;
and

aiming means for direction of a laser beam to a bond site.

10. The apparatus of claim 9 further comprising a ribbon spool; and
means to prevent the feed of ribbon from the spool.

11. The apparatus of claim 10 wherein the feed preventing means
comprises a clamp disposed about the ribbon for controlling ribbon feed.

12. The apparatus of claim 9, further comprising sighting means for
observation of the bond site.

13. The apparatus of claim 9, wherein the aiming means comprises a lens
disposed adjacent a mirror directing the laser beam to the bond site.

14. The apparatus of claims 12 and 13, wherein the sighting means
comprises a view port through the mirror.

15. The apparatus of claim 14 wherein the mirror is a dichroic mirror.

16. The apparatus of claim 9, wherein the means for direction of a laser
beam to a bond site comprises an optic fiber leading to a point adjacent the bond site.

17. The apparatus of claim 16, wherein the optic fiber adjacent the bond
head is embedded in the bond head.

18. The apparatus of claim 9 wherein the laser beam generator is a
Nd:YAG laser beam generator.

19. The apparatus of claim 9 further comprising a pattern-matching
automation table.

20. The method of claim 1, further comprising the steps of:

moving the bond head horizontally to a location proximate to the first bond
site, and

firing the laser for an additional predetermined time sufficient to form a
security weld.

21. A bonding apparatus for connecting a segment of a ribbon to at least one substrate pad to form a bond connection at the bond site, the apparatus comprising:

a laser beam source;

5 a movable pedestal including a bond foot with an aperture for directing beams from the beam source; and

an aiming structure to direct the beams precisely targeted at the bond site.